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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/690,340
Filing Date	October 21, 2003
First Named Inventor	Mikhail Godkin
Art Unit	2832
Examiner Name	Bemard ROJAS
Attorney Docket Number	351999-991310
Total Number of Pages in This Submission	

ENCLOSURES *(Check all that apply)*

- [x] Fee Transmittal Form
  - [ ] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [x] Extension of Time Request - 4 mos.
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) ________
  - [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [x] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [x] Other Enclosure(s) (please Identify below):

1. Appendices 1-4 (Publishd Appln US 2004/0155741), Final OA mailed 1/4/07, 2 references)
2. Return Postcard

Remarks

The Commissioner is hereby authorized to charge any deficiencies in fees and credit any overpyment of fees to Deposit Account No. 07-1896. A duplicate page is enclosed.

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	DLA Piper US LLP		
Signature	Gerald Sekimura		
Printed name	Gerald T. Sekimura		
Date	January 31, 2008	Reg. No.	30,103

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Typed or printed name	Ta-Tanisha L. Henry	Date	January 31, 2008

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FEE TRANSMITTAL
For FY 2008

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 2,150.00

Complete if Known	
Application Number	10/690,340
Filing Date	October 21, 2003
First Named Inventor	Mikhail Godkin
Examiner Name	Bernard ROJAS
Art Unit	2832
Attorney Docket No.	351999-991310

METHOD OF PAYMENT (check all that apply)

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES Fee ($)	FILING FEES Small Entity Fee ($)	SEARCH FEES Fee ($)	SEARCH FEES Small Entity Fee ($)	EXAMINATION FEES Fee ($)	EXAMINATION FEES Small Entity Fee ($)	Fees Paid ($)
Utility	310	155	510	255	210	105	
Design	210	105	100	50	130	65	
Plant	210	105	310	155	160	80	
Reissue	310	155	510	255	620	310	
Provisional	210	105	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	210	105
Multiple dependent claims	370	185

Total Claims ______ - 20 or HP = **Extra Claims** ______ x **Fee ($)** ______ = **Fee Paid ($)** ______

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims ______ - 3 or HP = **Extra Claims** ______ x **Fee ($)** ______ = **Fee Paid ($)** ______

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims — **Fee ($)** ______ **Fee Paid ($)** ______

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $260 ($130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

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4. OTHER FEE(S) **Fees Paid ($)**

Non-English Specification, $130 fee (no small entity discount) ______

Other (e.g., late filing surcharge): Appeal Brief Filing and Four-Month Extension of Time to Respond 2,150.00

SUBMITTED BY			
Signature	[signature]	Registration No. (Attorney/Agent) 30,103	Telephone (415) 836-2500
Name (Print/Type)	Gerald T. Sekimura		Date January 31, 2008

OIPE FEB 04 2008 IAP88 PATENT & TRADEMARK OFFICE

Attorney Docket No. 35199-991310

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Mikhail Godkin

Application No. 10/690,340

Filed: October 21, 2003

For: FLAT LINEAR VOICE COIL ACTUATOR WITH PLANAR COILS AND A SPRING-TYPE CHARACTERISTIC

Group Art Unit: 2832

Examiner: Bernard Rojas

APPEAL BRIEF

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Ta-Tanisha L. Henry

Ta-Tanisha L. Henry

Dear Sir/Madam:

This is an appeal from the Office Action, made final, dated January 4, 2007, ("Final Office Action"), and a Notice of Appeal that was received by the Patent Office on July 5, 2007. One (1) copy of this appeal brief is enclosed.

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TABLE OF CONTENTS

Page

Real Party in Interest

The real party in interest is BEI Sensor and Systems Company, the assignee of record, which is a fully consolidated company of Schneider Electric, SA.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

Claims 1 through 40 are pending in the application. Claims 1-4, 6-8, 10, 13, 14, 19, 32, 34-37, 39 and 40, have been finally rejected by the Examiner. This is an appeal of the rejection of claims 1-4, 6-8, 10, 13, 14, 19, 32, 34-37, 39 and 40.

Status of Amendments

No amendments were filed subsequent to the final rejection.

Summary of claimed subject matter

Five independent claims, 1, 10, 14, 19 and 32, are involved in the appeal. Claims 1, 10, 14, and 19 are directed to apparatus, and claim 32 is directed to a method.

As required by MPEP 1205.02, in the following concise explanation of the subject matter of the independent claims involved in the appeal, references are made to the specification and drawings as an aid for the Board to determine the claimed subject matter. However, these references are intended as examples of the subject matter of the claims, and there is no intention in the use of such references to limit the breadth of the invention claimed to the specific examples identified.

Claim 1:

Claim 1 is directed to an actuator[1] for operating upon a load having a load characteristic over a stroke length[2]. The actuator includes a field assembly[3] in which a first plurality of magnets[4] configured to provide flux density distributions in an air gap selected over the stroke length to substantially match the load characteristic over the stroke length[5]. The actuator also includes a coil assembly[6].

Claim 10:

Claim 10 recites a linear actuator[7] for operating upon a load having a load characteristic over a stroke length[8]. In the linear actuator a field assembly[9] includes distributed magnet field

[1] See Fig. 1, reference numeral 10; published application ¶¶ 0002, 0006, 0026.
[2] See Fig. 6, published application ¶¶ 0030, 0032, 0033, 0035.
[3] See Figs. 2A, 2B, 4, 5, reference numerals 12 and 14; published application ¶¶ 0026, 0038.
[4] See Fig. 2A, reference numerals 22A, 32A, 34A, 36A; published application ¶¶ 0027, 0038, 0039.
[5] See Figs. 2A, 6, reference numerals 22A, 32A, 34A, 36A; published application ¶¶ 0011, 0014, 0030-0036, 0043.
[6] See Figs. 1, 2B, 2C, 3, 4; reference numeral 16; published application ¶¶ 0026, 0029, 0034.
[7] See Fig. 1, reference numeral 10; published application ¶¶ 0002, 0006, 0026.
[8] See Fig. 6, published application ¶¶ 0030, 0032, 0033, 0035.
[9] See Figs. 2A, 2B, 4, 5, reference numerals 12 and 14; published application ¶¶ 0026, 0038.

sources[10] which provide a flux density distribution in an air gap over the stroke length corresponding to the load characteristic over the stroke length[11]. The linear actuator also includes a coil assembly[12].

Claim 14:

Claim 14 is directed to a linear actuator[13] for operating upon a load having a load characteristic over a stroke length[14]. The linear actuator includes a field assembly[15] that comprises a magnet structure which includes a plurality of magnets[16]. The plurality of magnets are arranged in a sequence so that at least two adjacent ones of the plurality of magnets having a first polarity are followed by at least another of the plurality of magnets having a polarity different from the first polarity[17], and so that flux distributions in an air gap over the stroke length provided by the sequence correspond to the load characteristic over the stroke length[18]. The linear actuator also includes a coil assembly[19].

Claim 19:

Claim 19 is directed to a linear actuator[20] including a field assembly[21]. The field assembly comprises a first field blank[22], a first plurality of magnets of one polarity followed by a second plurality of magnets of a different polarity[23]. The first and second pluralities of magnets

[10] See Fig. 2A, reference numerals 22A, 32A, 34A, 36A; published application ¶¶ 0027, 0031, 0038, 0039, 0043.
[11] See Figs. 2A, 6, reference numerals 22A, 32A, 34A, 36A; published application ¶¶ 0011, 0014, 0030-0036, 0043.
[12] See Figs. 1, 2B, 2C, 3, 4; reference numeral 16; published application ¶¶ 0026, 0029, 0034.
[13] See Fig. 1, reference numeral 10; published application ¶¶ 0002, 0006, 0026.
[14] See Fig. 6, published application ¶¶ 0030, 0032, 0033, 0035.
[15] See Figs. 2A, 2B, 4, 5, reference numerals 12 and 14; published application ¶¶ 0026, 0038.
[16] See Fig. 2A, reference numerals 22A, 32A, 34A, 36A; published application ¶¶ 0027, 0038, 0039.
[17] See Fig. 2A, reference numerals 22A, 32A, 34A, 36A; published application ¶¶ 0027, 0032, 0038, 0039, 0043.
[18] See Figs. 2A, 6, reference numerals 22A, 32A, 34A, 36A; published application ¶¶ 0011, 0014, 0030-0037, 0043.
[19] See Figs. 1, 2B, 2C, 3, 4; reference numeral 16; published application ¶¶ 0026, 0029, 0034.
[20] See Figs. 1 , reference numeral 10; published application ¶¶ 0002, 0006, 0026.
[21] See Figs. 2A, 2B, 4, 5, reference numerals 12 and 14; published application ¶¶ 0026, 0038.
[22] See Fig. 2A, published application ¶¶ 0027, 0029.
[23] See Fig. 2A, reference numerals 22A, 32A, 34A, 36A; published application ¶¶ 0027, 0032, 0038, 0039, 0043.

are positioned on the first field blank in a direction of motion of the linear actuator[24]. Also included in the linear actuator is a coil assembly[25] that includes a generally planar coil[26]. The planar coil comprises a first force generating portion spaced apart from a second force generating portion so that the first force generating portion is positioned over ones of the first plurality of magnets whenever the second force generating portion is positioned over ones of the second plurality of magnets[27].

Claim 32:

Claim 32 is directed to a method of configuring a linear actuator[28] having a field assembly[29] and a coil assembly[30] for operation upon a load having load characteristics which vary over a stroke[31]. The method comprises fashioning a magnet structure of the field assembly[32] along a direction of motion of the linear actuator[33] to distribute flux densities in an air gap in correspondence to the variations in the load characteristics over the stroke[34]; and configuring a coil of the coil assembly to be responsive to the distributed flux densities[35].

[24] See Fig. 2A, reference numerals 19, 22A, 32A, 34A, 36A, published application ¶¶ 0027, 0028.
[25] See Figs. 1, 3, 4, reference numeral 16; published application ¶ 0026.
[26] See Figs. 2B, 2C, 3, 4, reference numeral 18; published application ¶¶ 0029, 0033, 0034.
[27] See Figs. 2A, 2B, 2C, reference numerals 18, 36B/32B, 34B/22B; published application ¶¶ 0033, 0034.
[28] See Fig. 1, reference numeral 10; published application ¶¶ 0002, 0006, 0026.
[29] See Figs. 2A, 2B, 4, 5, reference numerals 12 and 14; published application ¶¶ 0026, 0038.
[30] See Figs. 1, 3, 4, reference numeral 16; published application ¶ 0026.
[31] See Fig. 6, published application ¶¶ 0030, 0032, 0033, 0035.
[32] See Fig. 2A, reference numerals 22A, 32A, 34A, 36A; published application ¶¶ 0027, 0038, 0039.
[33] See Fig. 2A, reference numerals 19, 22A, 32A, 34A, 36A, published application ¶¶ 0027, 0028.
[34] See Figs. 2A, 6, reference numerals 22A, 32A, 34A, 36A; published application ¶¶ 0011, 0014, 0030-0037, 0043.
[35] See Figs. 2A, 2B, 2C, reference numerals 18, 36B/32B, 34B/22B; published application ¶¶ 0033, 0034.

Grounds of rejection to be reviewed on appeal

The issues on appeal are:

(1) Whether claims 1 through 10, and 14 through 18, are indefinite under 35 USC §112, second paragraph, as being unclear as to what actuator structure is claimed by "a flux density distribution in the air gap over the stroke length to substantially match the load characteristic over the stroke length" (in claims 1 through 10), and by "a flux density distribution in the air gap over the stroke length provided by the sequence [of magnets] correspond to the load characteristic over the stroke length" (in claims 14 through 18).

(2) Whether claims 1-4, 6-8, 10, 32, 34-37, 39 and 40 are unpatentable under 35 USC §102(b) as anticipated by US Pat. No. 5,808,381 to Aoyama et al.(Aoyama et al.").

(3) Whether claims 14 and 19 are unpatentable under 35 USC §102(e) as anticipated by US Pat. No. 6,040,642 to Ishiyama ("Ishiyama").

(4) Whether claim 13 is unpatentable under 35 USC §103(a) over Aoyama et al. in view of Ishiyama.

Argument

Paragraph 004 of the published version of the subject application explains that, traditionally, desired force versus stroke characteristics are obtained in linear actuators by controlling the current being supplied to the actuator coil or coils. Providing control functions for such current control can involve significant costs and complexities beyond the design of the actuator itself.

The present invention addresses such disadvantages of prior linear actuators. As explained, for example, in paragraphs 0011, 0031 and 0036 of the published version of the subject application, the design of an actuator may be simplified by configuring or fashioning the "distribution" of the magnetic flux density provided by the magnet sources of the actuator's field assembly to take into account expected load and other characteristics. In particular, with such an approach, it may be possible to substantially reduce or eliminate the need to control the current applied to the coil assembly of the actuator in order to obtain desired force versus stroke characteristics for the actuator.

In an example of the invention, described in paragraphs 0032 through 0035 of the published version of the subject application, the sizing and distribution of adjacent magnets of the same polarity in the field assembly are selected so that a stroke versus force pattern can be obtained which closely matches the load characteristics of a spring.

Involved independent claims 1, 10, 14, and 32, recite that the magnet sources of the field assembly are configured or arranged to provide distributions of flux density in the air gap related to the characteristics of a load. Involved independent claim 19 recites the use of consecutive or adjacent magnets of the same polarity, followed (along the direction of motion) by consecutive or adjacent magnets of a different polarity. These magnets will then provide a flux density

distribution in the air gap which is related to the sizing and distribution of the magnets along the direction of motion.

The Examiner's rejections must be overturned for the following reasons:

The Examiner's rejection of claims 1 through 10, and 14 through 18, as indefinite under 35 USC §112, second paragraph, must be overturned because the disputed passages particularly and distinctly set forth the relationships of the recited "load characteristic" to the actuator structures, as highlighted in the following table:

	Claim 1	Claim 10	Claim 14
the actuator structure:	"first plurality of magnets" [of the field assembly]	"magnet field sources" [of the field assembly]	"plurality of magnets" [of the magnet structure of the field assembly]
relationship link:	"configured to provide"	"distributed . . . which provide"	"arranged . . . so that"
result of "load characteristic" relationship to actuator structure:	"flux density distributions in an air gap selected . . . to substantially match the load characteristic over the stroke length"	"a flux density distribution in an air gap . . . corresponding to the load characteristic over the stroke length"	"flux distributions in an air gap . . . correspond to the load characteristic over the stroke length"

The Examiner's rejection of involved claims 1-4, 6-8, 10, 32, 34-37, 39 and 40 as unpatentable under 35 USC §102(b) as anticipated by Aoyama et al., must be overturned because Aoyama et al. do not teach or suggest or make obvious configuring or fashioning the "distribution" of the magnetic flux density provided by the magnet sources of the field assembly of an actuator to correspond to or substantially match expected load characteristics as recited in involved independent claims 1, 10 and 32.

The Examiner's rejection of involved independent claims 14 and 19 as unpatentable under 35 USC §102(e) as anticipated by Ishiyama must be overturned because Ishiyama does not teach or suggest or make obvious the use of consecutive or adjacent magnets of the same

polarity, followed (along the direction of motion) by consecutive or adjacent magnets of a different polarity as recited in involved independent claims 14 and 19. Further, as to claim 14, Ishiyama does not teach or suggest or make obvious a plurality of magnets arranged so that the "distributions" of the magnetic flux density correspond to expected load characteristics.

The Examiner's rejection of involved dependent claim 13 as unpatentable under 35 USC §103(a) over Aoyama et al. in view of Ishiyama, must be overturned because, in addition to the reasons set forth herein for involved independent claim 10, Aoyama et al. and Ishiyama do not teach, suggest or make obvious magnet field sources with dimensions selected so that the flux density distribution provided in the air gap by the magnetic field sources "increases in a direction of motion of the linear actuator," as recited in claim 13.

Rejection of claims 1-10, and 14-18: 35 USC 35 USC §112, second paragraph

The Examiner rejected claims 1-10 and 14-18 under 35 USC 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner stated:

> Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what actuator structure is claimed by "a flux density distribution in the air gap over the stroke length to substantially match the load characteristic over the stroke length". Applicant has not claimed a specific load characteristic. No structure has been claimed to provide any particular activation force.
>
> Claims 14-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what actuator structure is claimed by "a flux density distribution in the air gap over the stroke length provided by the sequence [of magnets] correspond to the load characteristic over the stroke length". Applicant has not claimed a specific load characteristic. No structure has been claimed to provide any particular activation force.

(Final Office Action, pages 2-3.)

Contrary to the Examiner's assertion as to claims 1-10, that "[i]t is unclear what actuator structure is claimed by 'a flux density distribution in the air gap over the stroke length to substantially match the load characteristic over the stroke length'," an examination of that phrase in the context of involved independent claim 1 distinctly and particularly reveals the structure of the claimed actuator structure to which it relates:

> a field assembly comprising a first <u>plurality of magnets</u> <u>configured to provide</u> *flux density distributions in an air gap selected over the stroke length to substantially match the load characteristic over the stroke length*;
>
> (Claim 1 excerpt, emphasis added)

As is readily apparent from the "field assembly" element of claim 1, reproduced above, a "plurality of magnets" of the field assembly are "configured to provide" the recited "flux density distributions in the air gap over the stroke length to substantially match the load characteristics over the stroke length." Thus, as explained, for example, in paragraph 0031 of the published specification, by tailoring the distribution of the magnetic field sources to provide a magnetic field distribution which better matches the characteristics of the load being handled, one can simplify the actuator design and substantially reduce or eliminate the need to control the current applied to the coil in order to obtain the desired force characteristics.

With respect to involved independent claim 10, an examination of that phrase, in context, also distinctly and particularly reveals the structure of the claimed actuator structure to which the phrase relates:

> a field assembly comprising <u>distributed</u> <u>magnet field sources</u> <u>which provide</u> a *flux density distribution in an air gap over the stroke length corresponding to the load characteristic over the stroke length*;
>
> (Claim 10 excerpt, emphasis added)

The "field assembly" element of claim 10, reproduced above, recites that the "magnet field sources" are "distributed magnet field sources." These distributed magnet field sources are the structure of the field assembly "which provide" the recited "flux density distribution in the air gap" that are recited as "corresponding to the load characteristic."

As to claims 14-18 the Examiner has asserted that "[i]t is unclear what actuator structure is claimed by 'a flux density distribution in the air gap over the stroke length provided by the sequence [of magnets] correspond to the load characteristic over the stroke length'." (See page 3, Office Action.) An examination of that phrase, in context, also distinctly and particularly reveals the structure of the claimed actuator structure to which the phrase relates:

> a field assembly comprising a magnet structure which includes a <u>plurality of magnets</u> <u>arranged</u> in a sequence <u>so that</u> at least two adjacent ones of the plurality of magnets having a first polarity are followed by at least another of the plurality of magnets having a polarity different from the first polarity, and *flux distributions in an air gap over the stroke length provided by the sequence correspond to the load characteristic over the stroke length*;
>
> (Claim 14, excerpt, emphasis added.)

As can be seen from the "field assembly" element of involved independent claim 14, reproduced above, the actuator structure claimed by the phrase comprises a "plurality of magnets" that are "arranged . . . so that" the recited "flux density distributions" "correspond" to the recited load characteristics.

Thus, the disputed passages in 1-10 and 14-18 particularly and distinctly set forth the relationships of the recited "load characteristic" to the actuator structures, and the Examiner's rejection under 35 USC 112, second paragraph, must be overturned.

<u>Rejection of claims 1-4, 6-8, 10, 32, 34-37, 39 and 40: 35 USC §102(b) – Aoyama et al.</u>

The Examiner rejected claims 1- 4, 6-8, 10, 32, 34-37, 39 and 40 under 35 USC 102(b) as being anticipated by Aoyama et al., USP 5,808,381.

Independent claims 1, 10 and 32:

With respect to involved independent claims 1, 10 and 32, the Examiner stated:

> Claim 1, as best understood, Aoyama et al. discloses an actuator [figures 1 and 3] for operating upon a load having load characteristics, including a field assembly [1, 3] comprising a first plurality of magnets [1] configured to provide flux density distributions in an air gap [7]; and a coil assembly [2, 4].
>
> Claim 10, Aoyama et al. discloses a linear actuator [figure 3] for operating upon a load having load characteristics, including a field assembly [1,3] comprising distributed magnet field sources [1] which provide a flux density distribution in an air gap [7] corresponding to the load characteristics; and a coil assembly [2, 4].
>
> Claims 32, 34-37, 39 and 40, the method steps of configuring a linear actuator would have been necessitated by the product structure as described for claims 1-4, 6-8, and 10 previously.

(Final Office Action, pages 4, 5, and 6, respectively.)

As understood by Applicant, Aoyama et al. disclose a linear motor in which a driving circuit, supplying sinusoidal current to the coils, changes the current supplied to each coil to provide "certain thrust forces." (See, for example, col. 5, line 59 through col. 6, line 4; col. 2, lines 45-56; and col. 10, lines 35-37.) Thus, the configuration disclosed in Aoyama et al. is like the conventional linear actuators described in paragraph 0004 of the published subject application, in which desired force versus stroke characteristics are obtained by controlling the current being supplied to the coil or coils.

Even more significantly, there is no discussion in Aoyama et al. about configuring the magnets to provide flux density distributions that are selected to "substantially match" the load characteristics over the stroke length, such as recited in involved independent claim 1. Contrary to the Examiner's assertions, there is no discussion in Aoyama et al. of a correlation of the particular magnet configuration and flux density distribution to the characteristic of the particular load. Thus, Aoyama et al. do not disclose the use of distributed magnet field sources which

provide a flux density distribution "corresponding to" the load characteristics over the stroke length, as in involved independent claim 10. Similarly, Aoyama et al. do not teach or suggest the method of involved independent claim 32 of fashioning the magnet structure of the field assembly "in correspondence to the variations in the load characteristics over the stroke".

For these reasons, it is respectfully submitted that the Examiner's rejection of involved independent claims 1, 10 and 32 over Aoyama et al.. is improper and must be overturned.

Further, it is respectfully submitted that the Examiner's rejection over Aoyama et al. of involved dependent claims 2-4, and 6-8 (which ultimately depend from involved independent claim 1), and involved claims 34-37, 39 and 40 (which are dependent from involved claim 32), must also be overturned because they depend from patentable independent claims, but also for several additional reasons as set forth below.

<u>Dependent claim 2</u>:

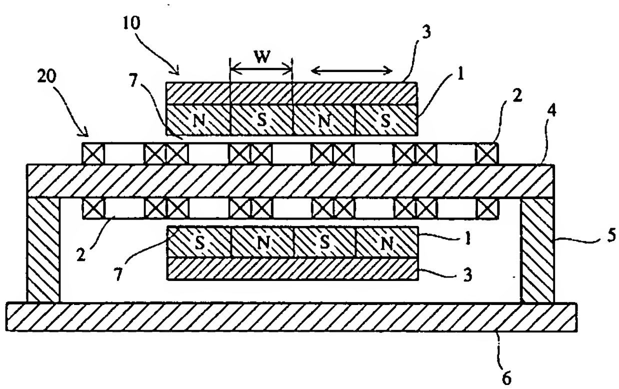
The Examiner cited col. 1, lines 5-15 of Aoyama et al. in rejecting involved dependent claim 2. However, it is clear from an examination of the cited passage, that what is described there is a "conventional linear motor" and that there is no description of any dimensions of magnets, or any selection of such dimensions to provide the selected flux densities, as recited in claim 2. Thus, the Examiner's rejection of involved dependent claim 2 is improper and must be overturned.

<u>Dependent claims 3, 4 and 8</u>:

The Examiner cited Figures 1 and 3 of Aoyama et al., in rejecting involved dependent claims 3, 4 and 8. The Examiner characterized those figures are showing magnets "aligned in "alternating groups, so that magnets in one of the alternating groups have a first polarity, and magnets in an adjacent alternating group have a second polarity opposite to the first polarity."

(Final Office Action, page 4.) The Examiner also characterized these figures as showing one of the aligned groups to include a pair of magnets having the same polarity. (Final Office Action, page 4.) Further, the Examiner characterized these figures as showing a second set of aligned groups of magnets, arranged in a second pattern of polarities which is a complement of a first pattern of polarities in which the first set of aligned groups of magnets are arranged. (Final Office Action, page 5.) However, it is apparent in those figures of Aoyama et al. that there are no such alternating <u>groups</u> of magnets of the same polarities, but only <u>individual</u> magnets of alternating polarity – N to S to N to S, etc.. Figure 3, for example, reproduced below, clearly illustrates this.

FIG. 1



It follows that because no alternating groups of magnets of the same polarity are shown, these figures cannot show a pair of magnets having the same polarity in an aligned group (claim 4), nor can they show "sets" of such aligned groups (claim 8). For these additional reasons, the Examiner's rejection of claims 3, 4 and 8 must be overturned.

<u>Dependent Claims 34-37, 39 and 40</u>:

In rejecting involved dependent claims 34-37, 39 and 40, the Examiner asserted that "the method steps of configuring a linear actuator would have been necessitated by the product

structure as described for claims 1-4, 6-8, and 10 previously." (Final Action, page 6.) The foregoing sections have detailed why Aoyama et al. do not teach the structures set forth in involved claims 1-4, 6-8 and 10. Therefore, because Aoyama et al. lacks those structures, as set forth above, Aoyama et al. lacks any product structure which would have necessitated the method steps of involved dependent claims 34-37, 39 and 40. The Examiner's rejection of involved dependent claims 34-37 must therefore be overturned.

Rejection of claims 14 and 19: 35 USC §102(e) – Ishiyama

The Examiner has rejected claims 14 and 19 as being anticipated under 35 USC 102(e) by Ishiyama, USP 6,040,642. The Examiner stated:

> Claim 14, as best understood, Ishiyama discloses a linear actuator for operating upon a load having load characteristics, including a field assembly [figure 5] comprising a magnet structure which includes a plurality of magnets [1,3] arranged in a sequence so that at least two adjacent ones of the plurality of magnets having a first polarity are followed by at least another of the plurality of magnets having a polarity different from the first polarity [figure 51, and flux distributions in an air gap [7] provided by the sequence; and a coil assembly [21].
>
> Claim 19, Ishiyama discloses a linear actuator [figures 1-2] including a field assembly comprising a first field blank [12], a first plurality of magnets of one polarity followed by a second plurality of magnets [figure 5] of a different polarity positioned on the first field blank in a direction of motion of the linear actuator, and a coil assembly [21] including a generally planar coil comprising a first force generating portion spaced apart from a second force generating portion so that the first force generating portion is positioned over ones of the first plurality of magnets whenever the second force generating portion is positioned over ones of the second plurality of magnets.

(Final Office Action, page 6.)

As understood by Applicant, Ishiyama discloses a linear motor, which like Aoyama et al., uses an alternating current source to drive a number of coils in order to obtain desired force versus position characteristics. (See Ishiyama, col. 2, lines 38-44, and Figure 7.) Further, as can be appreciated from examination of Figure 8, reproduced below, the flux densities provided by

the magnet structure in Ishiyama do not appear to correspond to the load characteristics of the load, for example a "printing head" as described at col. 1, lines 8-11 of Ishiyama.

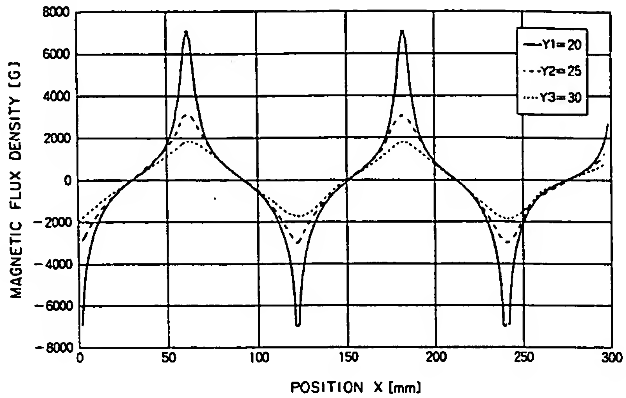


FIG. 8

Instead, it is respectfully submitted that Ishiyama uses the combination of the flux densities of Figure 8 and control of an alternating current source to drive a number of coils in order to provide the desired force versus position characteristic of the disclosed linear motor. In contrast, involved independent claim 14 is directed to a linear actuator operating upon a load having load characteristics over a stroke length, and in which distributed magnetic field sources provide "a flux density distribution in an air gap over the stroke length corresponding to the load characteristic over the stroke length." It is respectfully submitted that Ishiyama does not teach or suggest such a correspondence, first because Ishiyama is directed to a motor, not to an actuator, and second because there is no disclosure in Ishiyama of correlating the load characteristics to the flux density distribution provided by the magnet structures. The Examiner has not addressed this deficiency in Ishiyama in his rejection of claim 14 over Ishiyama. For at least this reason, it is respectfully submitted that the Examiner's rejection of involved independent claim 14 must be overturned.

Further, as to both involved independent claims 14 and 19, the Examiner points to Figure 5 of Ishiyama as disclosing "a plurality of magnets arranged in a sequence so that at least two adjacent ones of the plurality of magnets having a first polarity are followed by at least another of the plurality of magnets having a polarity different from the first polarity" (claim 14), and "a first plurality of magnets of one polarity followed by a second plurality of magnets of a different polarity" (claim 19). (See Final Action, page 6.) It is respectfully submitted that Figure 5, reproduced below, shows a sequence of individual magnets of alternating polarity – that is, SN to NS to SN to NS, etc.

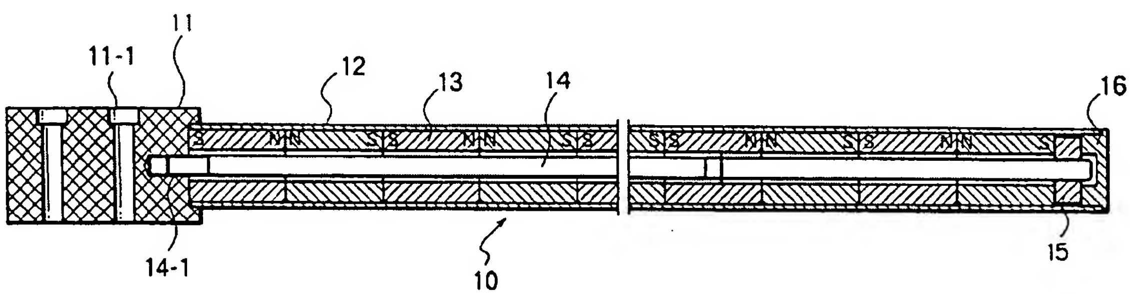


FIG. 5

Thus, in Figure 5, there is no at least two adjacent magnets of a first polarity followed by another magnet of a different polarity (claim 14), and there is no first plurality of magnets of one polarity followed by a second plurality of magnet of a different polarity (claim 19). Therefore, it is respectfully submitted that the Examiner's rejection of claims 14 and 19 over Ishiyama is in error and must be overturned.

<u>Rejection of claim 13: 35 USC §103(a) -- Aoyama et al. in view of Ishiyama</u>

The Examiner rejected claim 13 under 35 USC 103(a) as unpatentable over Aoyama et al. in view of Ishiyama. The Examiner stated:

> Claim 13, Aoyama et al. discloses the claimed linear actuator with the exception of the magnets being selected so that the flux density distribution in the air gap decreases in a direction of motion of the linear actuator.
>
> Ishiyama teaches a linear actuator wherein the magnets are selected so that the flux density distribution in the air gap decreases in a direction of motion of the linear actuator [figure 81.
>
> It would have been obvious to one of ordinary skill in the art at the time the invention was made to alter the field strengths of the magnets used in the linear actuator as taught by Ishiyama in order to change the linear actuators response characteristics depending on the expected load.

(Final Office Action, page 7.)

It is respectfully submitted that involved claim 13, as being dependent from patentable involved claim 10, is also patentable for the reasons set forth above in connection with claim 10. Further, Ishiyama teaches a flux density distribution that alternates between increasing and decreasing amounts along the direction of motion, and not a distribution which "increases in a direction of motion" as recited in claim 13. This can be seen from Figure 8 of Ishiyama, reproduced above in connection with the discussion of the Examiner's rejection of claim 14. For this additional reason, it is respectfully submitted that the Examiner's rejection of claim 14 is in error and must be overturned.

Conclusion

For the reasons set forth above, it is respectfully submitted that claims 1-10 and 14-18 are not indefinite under 35 USC 112, second paragraph; that Aoyama et al. do not teach or suggest the invention claimed in claims 1- 4, 6-8, 10, 32, 34-37, 39 and 40; that Ishiyama does not teach or suggest the invention claimed in claims 14 and 19; and that the combination of Aoyama et al. and Ishiyama does not result in the invention in claim 13. Applicant respectfully submits that the Examiner's rejections based upon 35 USC §112, second paragraph, §102(b), §102(e) and

§103(a) are in error, and hereby requests that the Board reverse the Examiner's rejections and affirm the patentability of the claims on appeal.

Respectfully submitted,

DLA Piper US LLP

Dated: January 31, 2008

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Claims appendix page(s)

Listing of Claims:

1. (Previously Amended) An actuator for operating upon a load having a load characteristic over a stroke length, including

a field assembly comprising a first plurality of magnets configured to provide flux density distributions in an air gap selected over the stroke length to substantially match the load characteristic over the stroke length; and

a coil assembly.

2. (Original) The actuator of claim 1, wherein dimensions of the first plurality of magnets are selected to provide the selected flux density distributions in the air gap.

3. (Original) The actuator of claim 2, wherein the first plurality of magnets are aligned in alternating groups, so that magnets in one of the alternating groups have a first polarity, and magnets in an adjacent alternating group have a second polarity opposite to the first polarity.

4. (Original) The actuator of claim 2, wherein the first plurality of magnets are positioned in a first set of aligned groups on a field blank, and at least one of the aligned groups of the first set of aligned groups includes a pair of magnets having the same polarity.

6. (Original) The actuator of claim I, wherein the field assembly includes a first field blank positioned to face a second field blank, the first and second field blanks each comprising a planar portion and additional sections which provide flux paths perpendicular to a direction of motion of the coil assembly, and further wherein the first plurality of magnets are positioned along the direction of motion on the planar portion of the first field blank.

7. (Original) The actuator of claim 6, wherein the first plurality of magnets are arranged in a first pattern of polarities, and further including a second plurality of magnets positioned on the planar portion of the second field blank to oppose the first plurality of magnets, and further wherein the second plurality of magnets are arranged in a second pattern of polarities which is a complement of the first pattern of polarities.

8. (Original) The actuator of claim 4, further including a second set of aligned groups of magnets positioned on an opposing field blank, wherein the first set of aligned groups are arranged in a first pattern of polarities, and further wherein the second set of aligned groups of magnets are arranged in a second pattern of polarities which is a complement of the first pattern of polarities.

10. (Previously Amended) A linear actuator for operating upon a load having a load characteristic over a stroke length, including

a field assembly comprising distributed magnet field sources which provide a flux density distribution in an air gap over the stroke length corresponding to the load characteristic over the stroke length; and

a coil assembly.

13. (Original) The linear actuator of claim 10, wherein dimensions of the magnet field sources are selected so that the flux density distribution in the air gap provided by the magnet field sources increases in a direction of motion of the linear actuator.

14. (Previously Amended) A linear actuator for operating upon a load having a load characteristic over a stroke length, including

a field assembly comprising a magnet structure which includes a plurality of magnets arranged in a sequence so that at least two adjacent ones of the plurality of magnets having a first polarity are followed by at least another of the plurality of magnets having a polarity different from the first polarity, and flux distributions in an air gap over the stroke length provided by the sequence correspond to the load characteristic over the stroke length; and

a coil assembly.

19. (Original) A linear actuator including

a field assembly comprising

a first field blank,

a first plurality of magnets of one polarity followed by a second plurality of magnets of a different polarity positioned on the first field blank in a direction of motion of the linear actuator, and

a coil assembly including a generally planar coil comprising a first force generating portion spaced apart from a second force generating portion so that the first force generating portion is positioned over ones of the first plurality of magnets whenever the second force generating portion is positioned over ones of the second plurality of magnets.

32. (Original) A method of configuring a linear actuator having a field assembly and a coil assembly for operation upon a load having load characteristics which vary over a stroke, comprising the steps of

fashioning a magnet structure of the field assembly along a direction of motion of the linear actuator to distribute flux densities in an air gap in correspondence to the variations in the load characteristics over the stroke; and

configuring a coil of the coil assembly to be responsive to the distributed flux densities.

34. (Original) The method of claim 32, wherein the load characteristics correspond to a spring having a spring constant K, and further wherein the fashioning step includes the step of distributing flux densities in the magnetic structure to provide a variation of flux density in the air gap along the direction of motion in correspondence with the spring having the spring constant K.

35. (Original) The method of claim 32, wherein the fashioning step includes the step of selecting the physical characteristics of the magnetic structure to provide the distribution of flux density in the air gap.

36. (Original) The method of claim 35, wherein the selecting step includes configuring the width dimension of the magnet structure along the direction of motion.

37. (Original) The method of claim 35, wherein the selecting step includes the step of providing a plurality of spaced apart magnets, each providing a different average flux density in the air gap to which a coil side is exposed.

39. (Previously Amended) The method of claim 32, wherein the fashioning step includes the step of accounting for friction characteristics of the actuator or load when creating a required flux density distribution in the air gap.

40. (Original) The method of claim 32, wherein the fashioning step includes the steps of

positioning the magnetic structure on a first field blank having a generally planar portion; and

forming additional sections extending along the planar portion in the direction of motion, so that when the first field blank is positioned opposite a second field blank to form the air gap, corresponding additional sections form a flux path perpendicular to the direction of motion for the magnet structure.

Evidence appendix page(s)

1. Application and drawings (as published in US 2004/0155741)
2. Final Official Action
3. Reference 1 -- 5,808,381 Aoyama et al.
4. Reference 2 -- 6,040,642 to Ishiyama.

APPENDIX 1

APPENDIX 2

Cen

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,340	10/21/2003	Mikhail Godin	2102483-991310	2197

29585 7590 01/04/2007
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SAN FRANCISCO, CA 94107-1957

EXAMINER	
ROJAS, BERNARD	

ART UNIT	PAPER NUMBER
2832	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

RECEIVED
JAN - 9 2007
DLA PIPER RUDNICK GRAY CARY

Office Action Summary	Application No.	Applicant(s)
	10/690,340	GODIN, MIKHAIL
	Examiner	**Art Unit**
	Bernard Rojas	2832

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *24-31* is/are allowed.

6)☒ Claim(s) *1-4, 6-8, 10,13,14,19, 32, 34-37, 39 and 40* is/are rejected.

7)☒ Claim(s) *5,9,11,12,15-18,20-23,33 and 38* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 09/28/2006 have been fully considered but they are not persuasive.

As to the 35 USC § 112 second paragraph rejection of claims 1-10 and 14-18, Applicant has not claimed a specific load characteristic or actuator structure to provide any particular activation force.

As to claims 1, 10 and 32, Applicant states that Aoyama et al. fails to teach configuring the magnets to provide a flux density distribution selected to substantially match the load characteristics over the stroke length. Applicant has not claimed a specific load characteristic or actuator structure to provide any particular activation force which would result in a structure different from Aoyama et al., that discloses a first plurality of magnets [1] configured to provide flux density distributions in an air gap [7] as seen in figures 1 and 3.

As to claim 14-19, Applicant states that Ishiyama et al. fails to teach configuring the magnets to provide a flux density distribution selected to substantially match the load characteristics over the stroke length. Applicant has not claimed a specific load characteristic or actuator structure to provide any particular activation force that would result in a structure different from Ishiyama et al.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what actuator structure is claimed by "a flux density distribution in the air gap over the stroke length to substantially match the load characteristic over the stroke length". Applicant has not claimed a specific load characteristic. No structure has been claimed to provide any particular activation force.

Claims 14-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what actuator structure is claimed by "a flux density distribution in the air gap over the stroke length provided by the sequence [of magnets] correspond to the load characteristic over the stroke length". Applicant has not claimed a specific load characteristic. No structure has been claimed to provide any particular activation force.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 6-8, 10, 32, 34-37, 39 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Aoyama et al. [US 5,808,381].

Claim 1, as best understood, Aoyama et al. discloses an actuator [figures 1 and 3] for operating upon a load having load characteristics, including a field assembly [1, 3] comprising a first plurality of magnets [1] configured to provide flux density distributions in an air gap [7]; and a coil assembly [2, 4].

Claim 2, Aoyama et al. discloses the actuator of claim 1, wherein dimensions of the first plurality of magnets are selected to provide a flux density in the air gap [col. 1 lines 5-15].

Claim 3, Aoyama et al. discloses the actuator of claim 2, wherein the first plurality of magnets are aligned in alternating groups, so that magnets in one of the alternating groups have a first polarity, and magnets in an adjacent alternating group have a second polarity opposite to the first polarity [figures 1 and 3].

Claim 4, Aoyama et al. discloses the actuator of claim 2, wherein the first plurality of magnets are positioned in a first set of aligned groups on a field blank, and at least one of the aligned groups of the first set of aligned groups includes a pair of magnets having the same polarity [figures 1 and 3].

Claim 6, Aoyama et al. discloses the actuator of claim 1, wherein the field assembly includes a first field blank [3] positioned to face a second field blank, the first

and second field blanks each comprising a planar portion and additional sections which provide flux paths perpendicular to a direction of motion of the coil assembly, and further wherein the first plurality of magnets are positioned along the direction of motion on the planar portion of the first field blank [figures 1 and 3].

Claim 7, Aoyama et al. discloses the actuator of claim 6, wherein the first plurality of magnets are arranged in a first pattern of polarities, and further including a second plurality of magnets positioned on the planar portion of the second field blank to oppose the first plurality of magnets, and further wherein the second plurality of magnets are arranged in a second pattern of polarities which is a complement of the first pattern of polarities [figures 1 and 3].

Claim 8, Aoyama et al. discloses the actuator of claim 4, further including a second set of aligned groups of magnets positioned on an opposing field blank, wherein the first set of aligned groups are arranged in a first pattern of polarities, and further wherein the second set of aligned groups of magnets are arranged in a second pattern of polarities which is a complement of the first pattern of polarities [figures 1 and 3].

Claim 10, Aoyama et al. discloses a linear actuator [figure 3] for operating upon a load having load characteristics, including a field assembly [1, 3] comprising distributed magnet field sources [1] which provide a flux density distribution in an air gap [7] corresponding to the load characteristics; and a coil assembly [2, 4].

Claims 32, 34-37, 39 and 40, the method steps of configuring a linear actuator would have been necessitated by the product structure as described for claims 1-4, 6-8, and 10 previously.

Claims 14 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishiyama [US 6,040,642].

Claim 14, as best understood, Ishiyama discloses a linear actuator for operating upon a load having load characteristics, including a field assembly [figure 5] comprising a magnet structure which includes a plurality of magnets [13] arranged in a sequence so that at least two adjacent ones of the plurality of magnets having a first polarity are followed by at least another of the plurality of magnets having a polarity different from the first polarity [figure 5], and flux distributions in an air gap [7] provided by the sequence; and a coil assembly [21].

Claim 19, Ishiyama discloses a linear actuator [figures 1-2] including a field assembly comprising a first field blank [12], a first plurality of magnets of one polarity followed by a second plurality of magnets [figure 5] of a different polarity positioned on the first field blank in a direction of motion of the linear actuator, and a coil assembly [21] including a generally planar coil comprising a first force generating portion spaced apart from a second force generating portion so that the first force generating portion is positioned over ones of the first plurality of magnets whenever the second force generating portion is positioned over ones of the second plurality of magnets.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama et al. [US 5,808,381] in view of Ishiyama [US 6,040,642].

Claim 13, Aoyama et al. discloses the claimed linear actuator with the exception of the magnets being selected so that the flux density distribution in the air gap decreases in a direction of motion of the linear actuator.

Ishiyama teaches a linear actuator wherein the magnets are selected so that the flux density distribution in the air gap decreases in a direction of motion of the linear actuator [figure 8].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to alter the field strengths of the magnets used in the linear actuator as taught by Ishiyama in order to change the linear actuators response characteristics depending on the expected load.

Allowable Subject Matter

Claims 24-31 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 24, the prior art of record does not teach nor suggest, in the claimed combination, a linear actuator operational in a direction of motion including a plurality of field sub-assemblies each comprising a field blank, and wherein at least one of the plurality of field sub-assemblies includes a first sequence of magnets of one polarity followed in the direction of motion by a second sequence of magnets of a different polarity, wherein the plurality of field sub-assemblies are positioned with respect to one another to form a gap between the at least one of the plurality of field assemblies which includes the sequences of magnets, and another of the plurality of field assemblies; and a coil assembly including coils positioned within the gap in a plane substantially parallel to the direction of motion.

Claim 28, the prior art of record does not teach nor suggest, in the claimed combination, a linear actuator operational in a direction of motion including a plurality of field sub-assemblies each comprising a field blank, wherein a first one of the plurality of field sub-assemblies includes consecutive groups of magnets, each one of the consecutive groups of magnets including a plurality of magnets arranged to have a selected magnetic polarity and to produce a selected magnetic flux density distribution in an air gap, and further wherein the first one of the plurality of field sub-assemblies is positioned with respect to a second one of the plurality of field sub-assemblies to form the air gap between them; and a coil assembly including at least one coil positioned in a

plane within the air gap, wherein the plane is substantially parallel to the direction of motion of the linear coil actuator.

Claims 5, 9, 11, 12, 15-18, 20-23, 33 and 38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Rojas whose telephone number is (571) 272-1998. The examiner can normally be reached on M-F 8-4:00), every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin G. Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Br

ELVIN ENAD
SUPERVISORY PATENT EXAMINER
2200 2006

APPENDIX 3

APPENDIX 4

Related proceedings appendix page(s)

There are no related proceedings.